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SHORT REVIEW ON APPLITION OF ARTIFICIAL NUERAL NETWORK IN MEAT INDUSTRY

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ABSTRACT

In comparison with traditional nonlinear methods with its excellent fault tolerance, Artificial Neural Network has the capability of modeling complex relationships and also is highly scalable. Nowadays, neural network method spans all area of science where in food industries play an important role in quality inspection. Although the demand to apply ANN is accelerating growingly, still study on its different concepts of implementing in food industries is required. This article reviews the inspection aspects of ANN in meat industries in regards with quality inspection.

KEY WORDS

ANN, meat, systems, indusyry, network.

Basic concepts of ANN, Application of Artificial Neural Networks: ANN mechanism evolves from the idea of simulating human brain [10, 11]. Regarding its initial unpromising algorithm, ANN enhanced into a strengthened computational method where detection of behavior among complex data made possible. Well explained data set with an appropriate mathematical models unlikely required ANN method of analysis (Mirhabibi et al, 2015).

Feed-forward neural network: This type of network is the first developed technique of ANN where information moves only in one direction, forwarded from the input neurons to the output nodes with no cycle and loop. Perceptron is the simplest kind of it. Back propagation learning consists of supervised algorithm with ability of correcting the weights within each layer of neurons in proportion to the error of preceding layer level (Mirhabibi et al, 2015).

Kohonen neural networks: Human's brain contains of some neighborhood neurons curtained specialized to store information and thus this part of brain has basically used to develop Kohonen ANN which mimics human brain functioning i.e., this type of ANN applied unsupervised learning strategy (independent variables for the input vectors) are needed (Mirhabibi et al, 2015).

Counter-propagation (CP-ANN): CP-ANN categorizes into stages; kohonen layer (unsupervised with mapping of object) and supervised learning base step where response or target value required (Mirhabibi et al, 2015).

ANN in meat products:

Chicken: One of the most important issues in poultry industry is predicting the amount of coliform in the ground water near poultry farms. The ANN model developed targeted to predict this amount along with employing BNN algorithm to utilize optimization. Given input parameters such as number of chicken, depth of well and etc, aforesaid algorithm and ANN estimate the possible amount of wells in a satisfactory and could be a means of estimating the ground water pollution (Karadurmus et al, 2012).

Fish: the amount of fish freshness is key factor in consumer acceptance when purchasing, thus ANN system can design an intelligent system to measure of spoiled fish. Electronic nose are so dependent to provide a good estimation of freshness assessment in

laboratory environment. This intelligent system with exhibiting accuracy up to 91% can successfully identify freshness the number of days after catching (Hosseini et al, 2008).

Hen: ANN is one of the novel methods of predicting complicated relationship among parameters which can be demand in any food industries branch. ANN can be regarded as a path to validate egg production. The benefit of applying ANN is to be capable fitting to any kind of dataset with no need to assumption. MLP neural network also can play an as alternative method to fit to egg production (Savegnago et al, 2011).

Lamb: like fish, freshness is key factor in determination the wellness degree of a lamb carcass. A designed multiple data fusion with ANN for testing lamp has been developed, additionally machine vision technique considers an effective method to detect smell as well as surface color (Valus et al, 2010).

Sausage: study on Frankfurter sausage in order to develop ANN method in sausages industry can be mentioned through study on input parameters (initial moisture content, fat protein ratio, radius of frankfurter, and so forth) & output parameters (including Temperature at the frankfurter center, average temperature of the frankfurter and process time) Mittal, G. S., and Zhang, J. (2000). The developed and aforesaid model predicted effectively the temperature and moisture content of sausage (Frankfurter) during smokehouse cooking.

Conclusion

This short review presented a perspective and concept to introduce ANN demanding in different areas of food industries especially meat products. In recent years, ANN method has been developed to predict and enhance occurring of problems. ANN, as compared to laboratory testing provides a low cost and fast method for prediction in food science area. Also, ANNs have proved to be accurate for predictive analysis of food products.

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